AN

# INTRODUCTORY LECTURE

DELIVERED IN THE

## GRANT MEDICAL COLLEGE

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BY

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# LECTURE.

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The alternation of activity and repose appears to be a necessary condition of animated existence; which presents a striking contrast in this respect to the ceaseless motion in some cases, or the eternal immobility in others, of inanimate things. The law of nature thus exemplified extends also to the mind: as the bow, if occasionally unstrung, recovers its impaired elasticity, so do we return from our temporary rest with sharpened faculties, and with greater capacity for continued and profitable exertion.

Once more, when the sound of strife is being hushed among the great nations of the earth, and their warfare for the present at least is accomplished, we are rousing ourselves to exertion, collecting our forces for another but more peaceful campaign, and supplying by fresh recruits the gaps which the course of events has made in our ranks. As our success may greatly depend upon the capabilities and disposition of our new comrades, we must endeavour not merely to discipline them by rule and system, but to win them over to active and hearty co-operation. They come to us, perhaps, with very imperfect ideas of the nature of the duties which will be required of them, of the spirit in which they are to be undertaken, or even of the great objects which it is needful to attain: it may not be out of place, therefore, before proceeding to the work, to sketch, however slightly, an outline of our intended operations. And those of us to whom, after the labour of several years, the

duties of the task are no novelty, will find, I am convinced, no little advantage in calmly reviewing at times these several points,—in satisfying ourselves whether we have duly put forth our energies,—whether we have rightly appreciated the value of the methods by which our studies are pursued,—and, more than all, whether these are regulated by the best motives, and whether we sufficiently comprehend, and assiduously bear in mind the ultimate object towards which they are to lead us. It is a critical time of life through which you are now passing: the habits which you are now forming—of care or of inattention—of study or of idleness—of raising your minds to noble and humanising aims, or of letting them sink unchecked into mere selfish and temporal desires—will harden and crystallise within you, and will influence the course of all your future years.

I remember how, in the school in which some of my earlier years were passed, a few short but instructive sentences were conspicuously written on the walls of our place of study, and, thus, were ever before our eyes. On entering, we saw in front of us the encouraging maxim—"Earnest labour overcometh all things."* If we turned round, the entrance door was surmounted by the stern but faithful admonition—"Either learn or depart hence."† Where the classes underwent examination, our emulation was roused thus—"Wilt thou so patiently permit such great rewards to be snatched from thee without one effort?"‡ On the way leading to the place of recreation was written—"It may delight us in after years to remember these things also"‖; while on a vacant spot we were truly reminded—"The industrious man will, even in his

* "Labor omnia vincit
Improbus."

† "Aut disce aut discede."

‡ "Tantane tam patiens nullo certamine tolli
Dona sines?"

‖ "Hæc olim meminisse juvabit."

hours of ease, find something to do."* Golden words these! may they be ever in your minds, as they ought to have been in ours; and in due place and season cheer you on your way of toil, or temper, with the recollection of responsibilities that cannot be evaded, the hours you may be but too willing to devote to enervating self-satisfaction and inglorious ease.

We will first consider the more immediate object of our meeting—the nature of the "Healing Art," or the combination of medicine with surgery. Of all the arts which conduce to the comfort of man, this has been the latest to arise, and the last to attain to anything approaching a high degree of development. In the infancy of our race, when the nature of the various agencies from whence natural phenomena arise was utterly unknown, superstition usurped the place of reason; disease and death appeared to be out of the ordinary course of things, and were believed to be the direct manifestations of the anger of the spiritual powers that ruled the world. Hence, to overcome disease, and to ward off death, the obvious course appeared to be to appease the offended deities,—if powerful, by sacrifices and offerings,—and if of inferior rank, to subdue them by the force of charms and incantations. Amongst barbarous tribes, therefore, the priest and the physician are one; medicines are unknown, and the art of healing is restricted to the performance of certain ceremonies, generally absurd, often disgusting, and always inefficacious.

As civilisation advances, we find that in certain cases, chiefly surgical ones, recourse is had to more material aids. Arrows and other weapons are extracted, wounds dressed, and a few simple remedies of herbs are administered internally. As the social state became more advanced, men had leisure to observe that diseases were not so very capriciously inflicted, but that they might be without much

* "Gnavus etiam in otio negotiosus est."

difficulty arranged in somewhat regular groups, and that each disease, when once developed, progressed to its termination, either in health or recovery, by a more or less regular course. It was found, also, after various irregular trials, that the use of certain means, such as exercise, particular kinds of diets, the internal use of certain vegetables, and outward applications, had the effect of modifying the course of diseases, either for the better or the worse. Thus commenced the first regular practice of medicine, slowly and painfully feeling its way; often erring in judgment, and as often correcting its errors by the progressive course of experience. The only historical nations of antiquity among whom any traces have been preserved to us of the exercise of medicine as a regular profession are the Indians, the Chinese, the Jews, and the Greeks. With regard to India, as far as we can at present learn, the medical art was cultivated with some success by the original conquerors of the country,—the Tamuls, of the Tartarian race. Their materia medica at least was extremely copious, and they were not without considerable skill in surgical operations. The Hindoo sacred writings are said to contain a system of medicine of great antiquity, copious and minute in detail, and in many respects correct in description, but disfigured with numerous irrelevant metaphysical subtleties. It appears to have the defect of most of the old philosophical writings of this country, viz. of too great a tendency to dogmatism, and an imperfect power of distinguishing between essentials and non-essentials. The system also afforded to the practitioner a ready method of concealing his ignorance of physical causes, by referring diseases which he did not understand to one of the numerous classes of devils with which men were said to be frequently possessed. Still, in spite of these defects, it is undoubtedly an interesting monument of early progress.

Our knowledge of Jewish and Chinese medicine is meagre in the extreme; and for most, in fact, that is really worth knowing of the ancient state of the profession, we must go to that noble race who have bequeathed to the world the enduring foundations, if not something more, of art, and science, and philosophy—the Greeks. The writings of Hippocrates, penned upwards of two thousand two hundred years ago, may still be read with pleasure and instruction, —the latter not so much for the actual facts which they communicate, for we have advanced far beyond them at the present day, as for the way in which they illustrate and enforce upon us the true method in which science is to be pursued, and the boundaries of our knowledge are to be enlarged. Hippocrates knew very little indeed of what disease really was, nor had he any probability of being able to know,—the keenest intellects and the ablest appliances of modern times are not unfrequently ineffectual to solve such matters; but he felt that his business was to cure diseases in the safest and the quickest way, and he adopted the best means open to him. He carefully watched the course of every case of disease, and noted each symptom which arose with its progress; then, comparing together a number of cases, he observed, while recognising the general identity of the same disease, the variations of the individual cases, and endeavoured to account for them by the differences of age, constitution, habits, locality, and so forth, peculiar to each person affected. Upon this followed inquiries as to the effect produced upon the progress of the disease by remedies; and on this point he was most assiduous in collecting information. In addition to his own experience, and that of his teachers, he obtained information as to the means of cure from other sources. In the temples dedicated to the worship of the gods, it was the custom of sick persons who had been cured, by the assistance of some particular deity as they supposed,

to hang up before the shrine some symbolical memento of the event, and often to engrave on a tablet, similarly exposed, a short account of their maladies, and of the material means of cure which they had adopted. A study of these votive tablets added largely to the information of Hippocrates as to the use of remedial agents, and by these various means he was enabled to lay down that practical code of rules which for many centuries after him constituted the basis of medical practice. It has often appeared to me that in these days, when the multitude of sciences and their vast comprehensiveness render it impossible for an individual to master more than a very small portion of them at the most, and obliges him, even in getting so far, to make use of the numberless methods already devised for shortening his labours and bringing him with little trouble to the desired point,—it has appeared to me, I say, likely to be of great benefit occasionally to revert to these early efforts, and, by seeing how much may be done with very limited means, to shame ourselves into doing more with all our present advantages. If Hippocrates knew little of anatomy, nothing of chemistry, and less than nothing of physiology, he knew at least, what many among us find great difficulty in learning all our lives—*what to seek for, and how to observe.* Every fact he saw had a meaning to him. He knew that it depended on something—or had a cause, as we say. And although he could very rarely get so far as to find out what the causes really were, he could generally discover that the facts which he observed had some kind of relation to other facts, and he could, by carefully grouping them together, extract from them practical rules of the greatest utility. One of the points that strike us, perhaps, more than anything in the old medical authors, is the great attention devoted to *prognosis,* or the knowledge of the tendency of the disease, according as such and such discriminating signs were

observed, to result either in death, relief, or recovery; whereas in modern works the space is occupied with details of diagnosis, pathology, and treatment, and the prognosis is dismissed in a sentence or two. And this illustrates very clearly the progress of medicine since the days of Hippocrates. In his day it was simply *an art:* now it is becoming, some, perhaps, will say it has already become, *a science.*

It may not be amiss to consider for a moment the difference between these things. If you go to a blacksmith and learn how to forge iron into various shapes,—to weld it, to cut it, to file it, and to cast it,—you are learning an art. If, again, you are taught by a painter how to draw on a flat surface representations of solid objects, how to mix colours, how to blend them on the canvas so as to make the picture give a true and pleasant image of its original, what you learn is still an art. But, if you wish to know the courses and the nature of the heavenly bodies, so as to be able to predict, for instance, the exact spot where each will certainly be seen many years hence,—or if you want to discover a method by which the greatest amount of motive power can be obtained from the flowing of a stream of water, or from the burning of a cart-load of wood,—then the only way in which you will be able to accomplish these things will be by a study of science. That there is a difference not only in the degree of labour required to bring you to these two classes of results, but also in its very kind and nature, will readily be acknowledged. Reduced to its simplest and most contracted expression, the difference is this—that in the one class of cases success depends upon the dexterity of the hands, in the other upon the acuteness of the mind. Art, therefore, thus viewed, is synonymous with handicraft,—science with knowledge. But the word art has in reality a much more extended meaning than mere manual skill; it implies the ability to apply

knowledge to practical use, while science does not mean simply knowledge, but real systematic knowledge of things as opposed to mere information regarding facts. In these, as in most cognate subjects, the distinctive signs are clearly enough recognised at the points where the subjects differ the most, but become less and less evident as we recede from those points, until we reach a sort of neutral ground, where the distinctions are so blended and confused that our definitions fail us. Thus, although no one, however unlearned, could fail to perceive the difference between a tree and a wild beast, yet, in examining the lowest forms of organised beings, the ablest scientific men are sometimes puzzled to know whether the living things they see are animals or vegetables. And, again, chemical affinity and molecular attraction seem in ordinary cases to be agencies distinct enough from each other; yet some phenomena seem to be so connected with both, that it is extremely difficult to know to which of the two they are to be referred. Now it is a curious thing that the word "surgery" signified originally handicraft, or a manual art,—practice as distinguished from theory; and a very low idea it gives us of the profession at a period when it could receive as its distinctive appellation a title, which ranked it no higher than the handicraft of the weaver or the potter. Shall we ask whether the original meaning of the word is applicable to the present state of surgery? Then, if it be true, as I have mentioned, that art, and in this instance the art of surgery or chirurgerie, signifies the "ability to apply knowledge to practical use," and not mere manual dexterity, surgery, no less than medicine, is something more than a handicraft. It is obvious, again, that the only way in which knowledge can be made readily available for practical use is by previously reducing it to order and system—in other words, by putting it into a scientific form. It is science, then, and not merely information or knowledge,

which is available for the purposes of art; and he will necessarily succeed the best in the art of surgery and medicine "who uses the science—the principles of the science—with the greatest practical skill and dexterity." It follows, then, that to practise the art of healing with success, the science or sciences on which it is based must first be studied.

It is not one only, but several sciences which thus form the groundwork of our profession; and their multiplicity, it must be confessed, adds no little to the difficulty of acquiring proficiency in it. Of these sciences, that which underlies the whole is obviously anatomy, which treats of the form and disposition of the various organs and members which make up the whole body. It does not need much reasoning to show the absolute necessity of an accurate knowledge on this point. Diseases in most cases either depend upon or are accompanied by changes in the structure and form of certain of these parts; and if we know nothing about their state in health, neither can we understand anything of the changes wrought in them by disease. And if this is the case in medicine, still more is it so in surgery. When a dislocated bone has to be put in its place, or a crushed limb is to be removed; when death is imminent from the bleeding of a wound, and an artery is to be cut down upon and tied to staunch it, yet without inflicting injury upon the delicate nerves and other structures that surround the vessel, how imperative is the necessity that the whole anatomy of the part should be mapped out before the mind's eye of the surgeon, before he ventures to touch the limb or to handle the knife! Before a man can undertake to rectify an error in the going of a clock, or to replace the damaged timber of the framework of a ship, he must make himself acquainted with the ordinary mechanism and structure of a clock and of a ship, otherwise it is impossible that he can detect the deviations

from its normal condition, or know at all how to remedy them when detected. Historically speaking, the progress of surgery, especially, has closely kept pace with the study of anatomy. But anatomy can only be learnt by the actual examination of the structures of the body—by dissection, in fact; a course of proceeding which men have in all times felt extreme reluctance to enter upon. The name of Herophilus, a predecessor of Hippocrates, has come down to us with honour, as the first who ventured thus to brave these natural feelings and the prejudices of mankind, by dissecting the human body; but his example does not appear to have been generally followed, and many of the ancient medical writers even derided the practice as useless to the physician. Without the knowledge thus acquired, surgery indeed existed, but it must have been a very haphazard sort of business. Lithotomy, for instance, now justly considered one of the most delicate of all the operations of surgery, appears to have been commonly practised in the days of Hippocrates; for in his celebrated oath, or formulary of a physician's duty, with which his book opens, he declares that he will never undertake to cut for the stone, but will leave it for those whose business it is to practise the art. In the case of this operation, as in many others, indeed, the boldness in undertaking it seems to have been commensurate with the ignorance of the conditions necessary to success. In this country, notwithstanding the antiquity of a sort of medicine among the principal races, anatomy appears never to have been studied, except occasionally in the lower animals, and by observations on the skeleton; and it constituted a really great epoch in the history of Indian civilisation when Madasuden Gupta was bold enough in the Medical College of Calcutta, twenty years ago, to oppose himself to the superstition and prejudices of his countrymen, by dissecting in their presence the first human subject so treated in India. Surgery in this country, there-

fore, remained in a less advanced state than medicine; and I am not aware that we owe to India any improvement in practice, save the celebrated operation for the reparation of noses, first introduced into Europe from India in the fifteenth century, brought into general repute by Tagliacozzi in the sixteenth century, and immortalised in Hudibras. And inasmuch as the operation arose from the numerous cases that occurred of the loss of this useful and ornamental member, the circumstance renders it extremely probable that the custom of cutting off people's noses has been prevalent here from a very remote antiquity,—an illustration, amongst many, of the light which studies often throw upon subjects which appear, on first sight, to have no possible connection with them.

The study of the form, position, and connections of the various parts of the body, naturally brings us to a consideration of their minute and intimate structure; and we are thus led to observe that, as there are found numerous parts, which we know as bones, muscles, ligaments, membranes, nerves, veins, and so on, so that each of these is made up more or less of structures whose nature is common to many or all of them, only differently arranged in each case; and thus we have, as general bases or substrata of organs, certain webs or tissues, such as cellular tissue, cartilaginous tissue, nervous tissue, and so forth. This study constitutes the department of general anatomy. But in a living creature, each organ or member has, like the individuals in a well organised community, some separate and peculiar office to perform. These offices or functions may be visible and striking in their effect, and minister to the relations of the individual with the external world,—such as the organs of locomotion or of speech; in which case they fall naturally under the head of simple or descriptive anatomy;—or they have reference to what we may consider the domestic life or internal economy, and be

concerned in the maintenance of life and health within. This most important, but by no means simple study, it is which we designate as physiology,—literally, the study of growth. When the structure of these organs becomes changed, and their functions are imperfectly performed, these changes become the subject of pathology, or the study of disease. I must not be understood to imply either that diseases originate in alteration of the structure of organs or not. Most organs are concerned in the production of some particular fluid or other, called secretions, because they are secerned or separated from the great mass of fluid in the body, the blood; and it is still, and may long remain, an undecided point how far the changes which constitute disease commence in the solid structure of the organs, or how far in the fluids themselves.

In tracing these structural changes, we have assistance of a nature altogether unknown to our forefathers, and carried to a degree that is even to ourselves truly marvellous. I mean the aid yielded us by the microscope, whereby objects are brought before our eyes under angles from twenty to one thousand times as great as that under which they would naturally appear. But into the nature of the fluids, whose study forms so important a part of physiology and pathology, the microscope can afford us little insight. The changes which fluids undergo are too subtle by far to be brought to light by the finest optical instruments, and we must seek for their discovery and explanation by other means. This knowledge we can only obtain from the study of chemistry, which teaches us the laws that regulate the combination of the ultimate particles of matter, and the properties of the compounds which they form with each other. This, in its full extent, is a study of the very widest range; and, it may be added, one in which each day brings with it a more and more rapid advancement. To obtain real proficiency in it as it is at present known, would

demand the exclusive labour of several years—to add to its riches by original investigations would require almost a life-time. We must be content in our profession, therefore, with a more limited acquaintance with it. Its fundamental principles are fortunately simple, precise, and comprehensive, and the following out those principles into their practical applications a pursuit of the most engaging nature. To study it, therefore, to the comparatively limited extent that is required in order to the due comprehension of physiological and pathological facts, cannot be considered a very great hardship. But chemistry concerns itself with the forces of inanimate matter only,—with those forces, that is, which are either inherent in or are impressible upon all matter. These forces become in animated beings materially modified, or, rather, they are controlled in some mysterious way by the operation of the vital force, the modes of whose agency it is impossible to reduce to regular laws, and in investigating which, therefore, experience is the only safe guide. Chemistry, thus, must remain merely the handmaid to physiology and pathology, but a servant, still, whose services become every day of greater and greater value.

The connection of chemistry and general anatomy with physiology leads me to speak of a subject that has been at times brought under discussion,—I mean the tendency, which medical studies are sometimes accused of having, towards promoting materialistic ideas. It is a charge often made against medical men that they are too apt to overlook, and even to deny the operation of spiritual agencies in the phenomena of living bodies; that they are tempted to view these phenomena as springing directly from the inherent forces of ordinary matter, and from the mode in which its particles are arranged in the body,—that they consider, in fact, life itself, and its manifestations, not as derived from a spiritual power separate from and superior to matter, but

as directly proceeding from, and therefore subordinate to, organisation and chemical agency. I look upon this charge as no less absurd and improbable *à priori* than false and unfounded in fact. The great materialistic writers of ancient times were none of them physicians, and the experience of the present day agrees with that of the past in assigning such notions rather to metaphysicians than to medical men. Indeed, the tendency of the present day seems to be to run into the opposite extreme; and to multiply rather than diminish the controlling forces of matter. We see spiritual agencies most gratuitously called in to account for phenomena explicable by the simplest application of ordinary laws; and men cannot now push a table round upon its begs, nor rap their knuckles upon its under surface, nor stupify themselves by gazing with vacant intentness upon a pellet of white paper, nor draw a sound from a glass tumbler by striking it with a suspended ring, nor read a line of writing by peeping beneath a handkerchief, without attributing these remarkable facts to one knows not how many forces, half spiritual, half corporeal,—whose multiplicity and caprice remind us more of the famed genii of the Arabian Nights than of the few heretofore great known forces of matter, simple, calm, and majestic. In many of those curious speculations, members of our profession, it must be confessed, have rather taken the lead than otherwise; and thus far the charge of materialism may be said to be more than disproved. That medical men are independent in the formation of their opinions, and bold in maintaining what they hold to be the truth, is, I conceive, undoubted; but they can hardly, one would think, be reproved for this.

But, apart from fact, it must seem, *à priori*, an unaccountable thing, that the study of medicine and its allied subjects should lead to materialism. If we were told that the exclusive direction of the mind to physical subjects,

in which the ordinary forces of matter were alone concerned, and in which the conclusions deduced from physical facts were worked out with mathematical accuracy, as in the case of astronomy, optics, mechanics, and so forth, had this effect, one could understand at least the pretext which might be afforded for the charge; for here, the laws under which phenomena are produced being discoverable with comparative ease, and these laws, once known, being sufficient to account for all the phenomena, the conclusion might seem, on a casual view, to be warranted, that these forces were essential to and inherent in matter; that matter and its forces are correlatives of each other; and that, as the laws are capable of reduction to simple mathematical formulæ, and are thus made to partake, as it were, of the nature of abstract truth, which can be conceived as existing independently of any material particles,—the independent, and hence eternal, existence of matter itself becomes in the highest degree probable. Matter being thus shown to be eternal, self-existent, and possessed of inherent force, is invested with the attributes of Godhead; and Pantheism, that most irreligious of all religions, becomes established. One could imagine such reasoning being applied to the case of the student of the exact physical sciences, although it would still be no difficult task to point out its fallacies. But how different is the case with the medical man? The merest common sense must tell him (to say nothing of his faith in an Allwise ruling Power) that all the varied phenomena of organic life must be connected by some kind of system,—that they must be dependent on some law or series of laws, could he only discover them; yet how difficult it is to find them out! When he thinks that he is, after many fruitless efforts, at last approaching the goal, he is baffled at the next turn by a fact irreconcilable with his formulæ, and he is content at last to accept as they are the facts that crowd upon him, without being able in the

majority of cases to bring them within the circle of general laws. He finds a principle superior to the material forces, and distinct from them, for it is only under certain circumstances that it operates, namely in the interior of a living body. The medical man, therefore, finds at every bedside the most absolute protest against materialism and pantheism. He does not, it is true, regard the laws and relations of the vital principle as knowledge altogether too high for him, and unattainable; he considers these, in fact, fit, if not very instructive subjects of discussion, when treated in a proper spirit, as in the pages of a Wilson Philip, or a Prichard; but he never entertains the futile hope of some day knowing what the vital principle in its essence really is. Such is the form in which not modern thinkers, but ancient philosophers, would have put the question, had their attention been turned towards it. Physical knowledge being to them almost a closed book, while mental speculation was as free to them as it is to us, their impulse was to leave the study of nature, in which their progress was necessarily slow and difficult, for the more enticing pursuit of speculative philosophy. A rigid systematising of the reasoning powers had seemed to them to have placed so unfailing and so far-reaching an instrument of research in their hands, that it appeared possible to arrive by its means at a knowledge of the very essential and intimate nature of all things; whereupon, once possessed of this master key, they would be able, by a descending route, to unlock all the meaner treasures of earthly lore. It was the same longing to discover a short and easy path to knowledge which prompted in later times the search for the philosopher's stone and the elixir of life, and the study of astrology. We adopt now slower but safer methods; we study the vital principle in its manifestations and effects, and try to find out, not what it is, but how it acts; and we take care, in all similar investigations, neither to neglect the humble duty of close

physical observation, nor to undervalue the loftier flights of abstract speculation. My own impression certainly is that the medical sciences offer the very best of all trainings for the true philosopher. In the study of anatomy he learns patiently to labour, and to store his mind with facts whose meaning is to be elucidated by the succeeding studies he takes up; in physiology and pathology the natural adaptation of means to end, and the relation of cause to effect, in the alteration of function traceable through several organs to its primary origin, are prominently brought before him; in chemistry he acquires habits of close attention and mathematical accuracy, and learns, if not exactly the Pythagorean doctrine that numbers are the fundamental principles of things, yet that all things were "ordered" and exist "in measure and number and weight." This material form of study is, again, tempered by the phenomena of psychology, wherein the ever marvellous connection of mind with matter, while always awakening his interest, yet too frequently baffles altogether his penetration to unravel the mysterious web, and restores that humble spirit, that quiet, yet active—that never-despairing yet never too exultant seeking for the truth, which is the characteristic of the philosopher.

The vast importance of the study of nature in the formation of a truly liberal and comprehensive mind was for many ages too little dwelt upon. We are now, by adding these subjects to the general curriculum of study in our established universities, tardily but honorably acknowledging its truth; yet even in antiquity we find occasionally a protest against the prevailing neglect of natural science. Physicians, to their honour be it spoken, have ever been amongst the foremost to do this,—nay, the very name, preserved only in the English language, implies this. Physic, from the Greek φύσις, "nature," signifies that relating to nature—natural science, as being the knowledge of the

uses of the productions of nature, especially drugs. Hence the term has passed into a synonym with medicine, but its original signification is preserved in the plural form, *Physics*. The highest order of medical practitioners have ever acknowledged and illustrated in their lives this obvious connection. Hear what the elegant and accomplished Celsus says, in the days of Augustus Cæsar. After reproving the wordy and unpractical writings of the physicians of his own day, he proceeds—"It is a truth, that nothing contributes more to the very *theory* of the healing art than *experience*. There are many things which, though not strictly pertaining to the arts themselves, yet do nevertheless assist them, by stimulating the ingenuity of the artist. Thus the contemplation of the things of nature, though it maketh not a physician, yet renders a man more fit for the [practice of] medicine. And it is probable that both Hippocrates and Erasistratus, and others (whoever, indeed, not content with treating merely of fevers and ulcers, have looked closely in any direction into the nature of things), have not, so to speak, been made physicians thereby, but have certainly thus become more excellent physicians." The whole introduction to his treatise on medicine, from which this is taken, is most admirable, in pointing out the requisites for a medical man, and the true way in which he may acquire proficiency, and advance his art; and with very little alteration it would make, antiquated though it be, an introductory discourse to the Session much more worth listening to than the present.

Of natural history, the only branch with which the medical man is at all intimately concerned is botany, and this chiefly on account of the close connection that exists between animal and vegetable physiology, and the light which the structure and functions of the one class of organised beings throw upon those of the other. Systematic botany

is also of considerable service in the study of the vegetable materia medica. We have thus, as the foundation of medical science, anatomy and physiology; as accessories, chemistry, botany, and materia medica; and as integral yet collateral portions of medicine itself, pathology and psychology. But medicine could not be complete did it not concern itself with the dangers which accompany, and the peculiar diseases which precede and follow, the act of parturition, and hence the supplemental branch of midwifery or obstetrics must be added; and further, the numerous cases in which medical evidence is of importance in the decision of legal cases necessitates the study of a second and last supplemental branch—that of medical jurisprudence, or medicine as connected with law.

It is a serious question now to ask, what is the object which you propose to yourselves in engaging in the labours necessary to master so many subjects of science, and in devoting five or six of the best years of your life to their acquirement? You propose to gain the means of livelihood,—to obtain whilst here, by your own exertions, that position among your fellows which will entitle you to lucrative scholarships,—and, when you go out into the world, to find yourselves admitted into a profession the practice of which will ensure you the means of comfortable support for the rest of your lives! And you do well. It is every man's duty to "learn, and to labour truly—honestly—to get his own living" in the world. Had you been each of you a tradesman or a merchant, engaged in buying goods as cheaply as possible, and selling them for the highest price you could get, you might be equally gaining an honest livelihood, and securing a competence. As tradesmen, your business would have been simply to buy and sell, and keep accounts. So long as you carried on a lawful trade, and dealt fairly with both

your creditors and your customers, you might have no reproaches to make to yourself or to receive from others. Your business would be confined within those limits, and your necessary intercourse with those you dealt with would require no other duties at your hands. Those who dealt with you would choose their goods for themselves, and if they erred in their choice the error in judgment and the loss would be equally their own; and your own also would be both the fault and the loss if you paid too much for your wares. In a learned profession the case is widely different. The sick who consult you choose not your medicines, but yourself: in the same way as, in buying their plate, they trust to the stamp upon it to ensure that it shall be of the full standard, so do they trust to the education you have received, to the diploma which you carry, to the reputation you may have acquired, as proofs that you have that within you which is of sterling value. They confide in these marks that you should be skilful, diligent, kind,—that you shall lend an ear to their complaints, and soothe their sorrows no less than assuage their pains; that you should begrudge no trouble in investigating their case; and that in forming your decision you should bring to bear upon it, with the promptitude yielded by experience, the full armoury of medical science. Now, supposing that you fail in this,—that you disappoint their expectations, or, at least, that you feel the inward consciousness of having been deficient in these requirements, although you may have been skilful enough to conceal your defects, and for the time to escape detection,—how stands the case? Would it not be something, morally speaking, very like a fraud, while bearing the nominal stamp of education and professional acquirements, to be able to give your patients, in return for their confidence, nothing but ill-founded judgment, ineffectual treatment, and an unsympathising ear? Would it not be to pass off, under the cover of the official

stamp, a base alloy for the sterling metal ?—Assuredly so; and conscience would, sooner or later, bring the deception home to the bosom. To avoid such reproaches, continuous diligence and a high moral sense of what is required of you are necessary, so that you may render yourselves truly worthy of the confidence that will be reposed in you.

On the other hand, what do you actually gain by your course of study here? Is it nothing more than the means of support—the prospect, perhaps, of wealth and ease, but not more than might be yielded by a Government office or a tradesman's occupation? I think there is, and something without which wealth and ease, and state and power are worthless, flavourless, unsatisfying shows. You come to us with some degree of education to begin with; at least, we endeavour to exact a guarantee that such should be the case. We assume that you can read, calculate, and reason; that you know something of history and of literature, and the elements of natural science. Your previous training has been mental training—your memory has been exercised, and your reason guided: it is the same in a different way here; but with this addition, that sensual phenomena are here brought into immediate connection with the operations of the mind; your abstracted deductions are submitted to the test of experiment, and external facts are accounted for and classified by the aid of the reasoning faculties. You cannot avoid being interested with the numerous phenomena to which your attention is called; you learn to refer them to their several causes—to discriminate between what on a rough view appear but very trifling and unimportant differences. You learn that in the production of almost every phenomenon in nature not one alone, but several causes are in operation; and that according as the one or other of these causes preponderates, does the phenomenon assume a different aspect, and

you come to understand how it is that the natural philosopher, by duly weighing all these several causes concerned, should he find them still inadequate to explain the observed fact, is often led to the discovery of new forces and new laws. You learn, in fact, how to observe, and to take an interest in observing; the habit reacts upon the vigour and activity of the mind, and while the organs of sense are kept more open to external impressions, the reflective powers are awakened and sharpened. The habit of observation is one that in this country is not only not cultivated, but positively repressed: apathy and indifference, social customs and religious prejudices, all combine to keep it in the background. But it is by means of it that human knowledge has been advanced. The truths of external nature and the truths of our inner spiritual existence cannot but harmonise together, if we rightly adapt them to each other; being equally truths, they must all in their several degrees conduce to the attainment of abstract truth. If, in the words of Indian philosophy, an objection should be raised that truth can never be thus attained,—that all external things are "Maya," a delusion,—I would merely remark that if so it is a delusion characterised by singular order and harmony—a madness in which there is method indeed; and if the study of so much beauty, and regularity, and subordination of means to ends, can lead to no good, then must it all be the very offspring of evil, set before us for the mere purpose to deceive and lead astray. You cannot be prepared for this fearful conclusion. You will acknowledge now, and learn to feel after a time, that the external world is as worthy of belief as the internal; that they are not independent of, but complementary, the one to the other, and that both are essential to the completion of the whole structure of divine truth—the universal kosmos.

But more; it is not only right ways of viewing nature

that these studies teach us :—the duties of a medical man do not consist in mere reflection,—they are not performed in solitude ;—they bring him into constant and immediate contact with his fellow-men. When *they* are stricken to the earth with the raging pestilence, or crushed and mangled in flesh and limb, or groaning beneath any of "the thousand natural ills that flesh is heir to," it is *his* art to feel for them, to relieve their anguish, to replace the tortured limbs, to fan the flame of life when dimly flickering in its socket, and to assist the natural efforts in expelling the morbific influence ; and if all is yet unavailing, by soothing bodily aids and by "good words in season kindly spoken" to help the fainting spirit through the dark portal of the grave. Thus, indeed, does the profession of the physician unite him in closest ties with his fellow-creatures, and teach him practically what all nations and all men must one day feel and acknowledge—the universal brotherhood of mankind.

This, then, is what you will have gained,—these enlarged and comprehensive views, these lofty aims, these kindly feelings, these habits of benevolence. Are they gifts not worth the having ? Is it reasonable that you should expect to offer no equivalent for them ? They bring, it should never be forgotten, increased responsibilities with them. Hence it is that more is required of you than of those whose education has not been thus cared for. Knowledge will have demanded its duties as well as conferred upon you its privileges ; yet it will leave you still gainers by the acquisition. Nay, more : the very performance of those duties will be to you a source of comfort and gratification, the more so as they are the more steadily held in view and continually practised. To some of you these doctrines may appear trite, to others untrue. I believe and trust that if you remain here you will find them otherwise.

To you, moreover, more than to any others, perhaps,

belongs the noble mission of spreading the light of civilisation and intelligence among your countrymen. If other considerations avail not, let ambition arouse you to do your best, and show yourselves both worthy of the benefits conferred upon you by a fostering Government, and capable of winning for yourselves a distinguished place among the chiefest; and though the opportunity may not fall to you of acquiring, either by devotion on the battle-field the immortal fame of a Larrey or a Thomson, nor by studious research a name as revered as that of Jenner or of Hunter, yet there is many an honorable niche vacant in the Walhalla of science, to which not genius nor fortune, but simple patient industry, accurate observation, and unsullied rectitude of purpose, will afford a sufficient title.

If I have now, however imperfectly, aided you in rightly appreciating the objects of your studies, and the best means of pursuing them, my task will have been fulfilled. My wish has not been so much to beguile you of your half hour in listening to eloquent declamation, which you must seek for elsewhere, as to suggest to you subjects for reflection. I leave it to you to work them out. I know well that it is the facts which our own senses perceive, the conclusions we ourselves draw, the resolves which we ourselves form and carry out, that alone have a lasting influence. The effect of the teacher's labours are, after all, limited; they are seen rather in their aggregate than in their particular results; it must ever mainly rest with each individual, under Providence, to discipline his mind and feelings, and to carve out his own road to fortune and to fame.